

# CALIFORNIA HIGH-SPEED TRAIN

Project Environmental Impact Report/Environmental Impact Statement

## SUPPLEMENTAL

## Alternatives Analysis Report

Merced to Fresno Section High-Speed Train Project EIR/EIS

August 2010

California High-Speed Rail Authority



U.S. Department of Transportation  
Federal Railroad Administration





California High-Speed Train Project



Merced to Fresno Section

SUPPLEMENTAL  
ALTERNATIVES ANALYSIS REPORT

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# CALIFORNIA HIGH-SPEED TRAIN PROJECT

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## Merced to Fresno Section

### Supplemental Alternatives Analysis Report

August 5, 2010



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1 SUPPLEMENTAL ALTERNATIVE ANALYSIS REPORT

This August 2010 Merced to Fresno Supplemental Alternatives Analysis (AA) Report updates the Preliminary AA Report that the California High-Speed Rail Authority (Authority) issued for the Merced to Fresno High-Speed Train (HST) Section in April 2010.

This Supplemental AA Report is brought forward because of a series of evaluations, development and refinements of previously concurred-upon design options, and heavy maintenance facilities (HMFs). These revisions include the following:

- The alternatives coming from the San Jose to Merced Section that joins as a wye junction with the Merced to Fresno Section have been revised. Both the two wye options, the Ave 24 Wye and the South SR 152 Wyes have been refined and better reflect input from some affected stakeholders. The Ave 24 Wye is expanded to avoid encroaching on Chowchilla and reduce farmland severance. The SR 152 Wye was developed further to avoid a number of local resources and, through these refinements and discussions, Ave 21 Wye has evolved from the previously identified Ave 22 Wye alignment.
- In reaction to the BNSF adjacent Alternative (A1), a series of two design options were requested by Merced County and the community of Le Grand to avoid/reduce associated impacts. For the A1 alignment, design options around the City of Le Grand were developed.
- Similarly, to avoid the City of Chowchilla on the UPRR adjacent Alternative (A2), a design option to the west of Chowchilla, which takes advantage of the Ave 24 Wye tracks, is under consideration. This design option will reduce total length of alignment, minimize elevated guideway, reduce the number of UPRR and SR 99 crossings, and facilitate options to connect to either the A1 or A2 alignment alternatives between Chowchilla and Fresno.
- Finally, the Merced to Fresno Section has conducted a screening analysis of the proposed HMFs between Merced and Fresno. The Supplemental AA Report presents the changes from the April 2010 Preliminary AA Report.

1.1 Outreach Program

Since 2008, more than 84 presentations and briefing reached the following stakeholders:

- Elected Officials
- Chamber of Commerce
- Resource Agency Staff
- Planning and Transportation Agency Staff
- Economic Development Agency Staff
- City Councils & County Boards of Supervisors
- Local Irrigation & Farm Bureau Organizations
- Community and Business Organizations
- Trade Organizations
- Environmental Justice Groups
- Business Members

A total of 36 Technical Working Group and Public Outreach events were held in year 2010:

- Technical Working Group Transportation /Planning Agencies (3)
- Public Information Meetings (9)
- Stakeholder Briefings (7)
- Elected Official Briefings (12)
- Community Organizations Presentation (1)
- County Farm Bureau (2)
- Station Workshop (1)
- Multicultural Outreach (1)

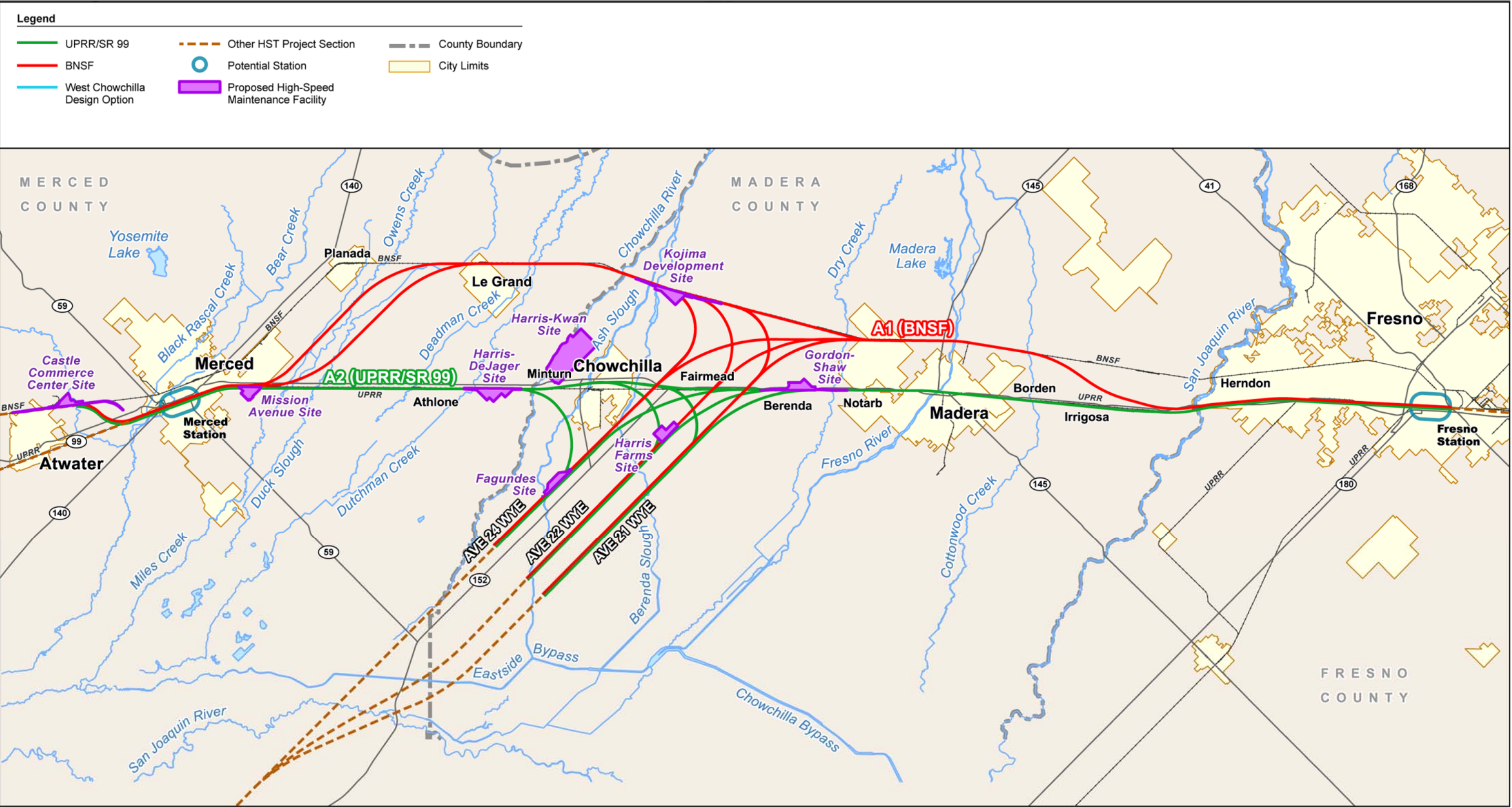
1.2 Concurred-Upon Preliminary Alignments

Per the previously submitted and concurred-upon Preliminary AA Report (April 2010), two alternatives, the BNSF (A1), and the UPRR/SR 99 (A2), were selected to carry forward through the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) process. The reasons for carrying them forward are stated below.

- Alternative A1 - BNSF
  - Statewide Program EIR/EIS 2005, Preferred Alternative
  - BNSF Memorandum of Understanding established
  - Least constraints with UPRR
  - Supported by Madera County and the cities of Chowchilla and Madera
- Alternative A2 – UPRR/SR 99
  - Bay Area Program EIR/EIS 2008, Preferred Alternative
  - Possible challenges with UPRR
  - Broad base of support
  - Least ecosystem impacts

The concurred-upon alternatives included Henry Miller/Ave 24 and South SR 152 were included as part of both the BNSF and the UPRR/SR 99 alternatives. In addition, eight proposed HMFs were submitted and introduced for further evaluation. Figure 1 illustrates previously concurred-upon alignments, wyes, and HMFs for further evaluation.

Figure 1: Previously Concurred-Upon Alternative Alignments, Wye, and Proposed HMFs





1.3 San Jose – Merced Wye Connection

The previously concurred-upon Preliminary AA Report introduced and evaluated different alternative connections to the San Jose-Merced routes. Two of the wye connection alternatives along Henry Miller/Avenue 24 and the South SR 152 Wye (vicinity of Avenue 21 and Avenue 22) were identified (Figure 2).

An extensive cooperative study of the two wyes (Ave 24 and Ave 21) by both the Merced to Fresno and the San Jose to Merced Section teams established that the general impacts are very similar and, therefore, both wyes are recommended to remain for further evaluation in the EIR/EIS.

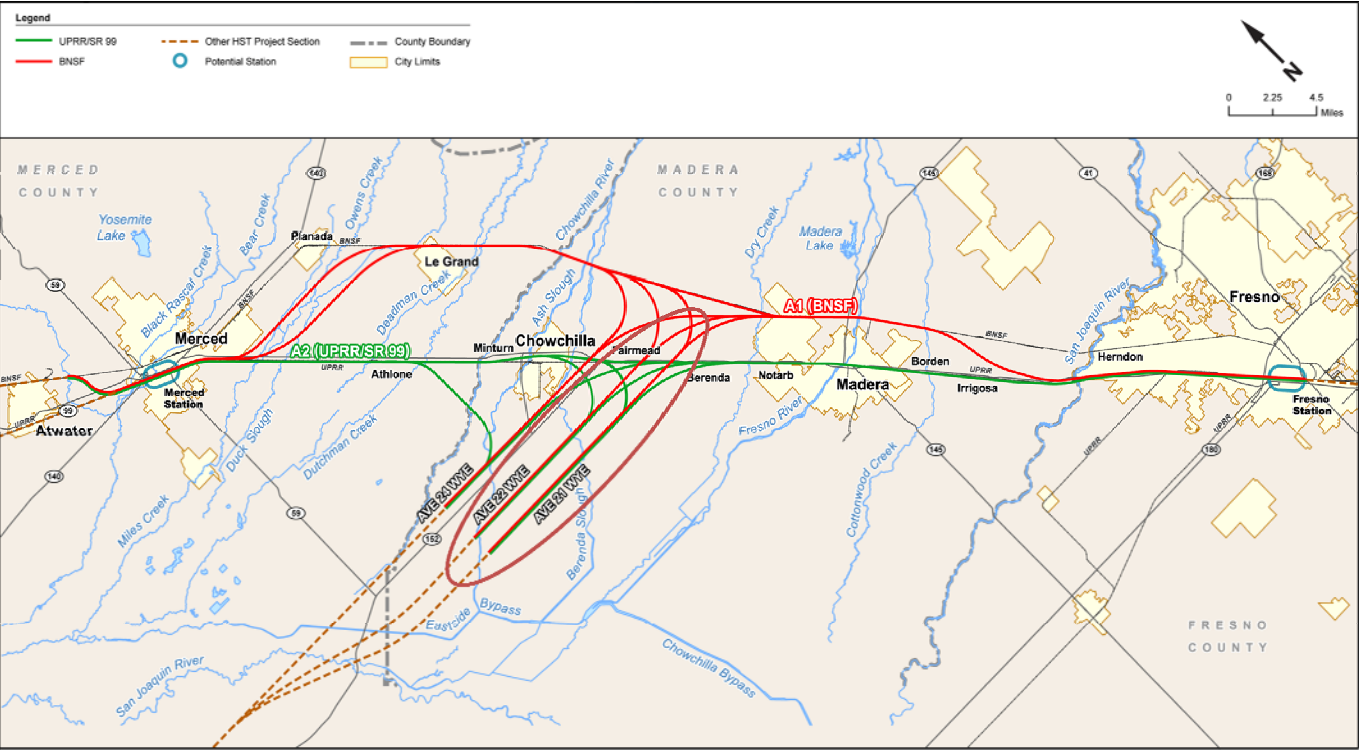
1.3.1 Henry Miller/Ave 24 Wye

As previously concurred upon in the Preliminary AA Report, both alternatives being carried forward into the EIR/EIS include two optional wye junctions as the HST connects from the San Jose to Merced Section. Those included the Ave 24 Wye and the South SR 152 Wye. The South SR 152 Wye was initially considered along Avenue 22, but design development revealed that the north and southbound legs potentially interfered with valuable resources, such as:

- Interference with the Chowchilla air space contours
- An new paleontological museum
- A new landfill
- Conflict with SR 99 Interchange

Additional community and agency input and concerted design effort led to general support from the cities of Merced, Chowchilla, and Madera, and Merced County and Madera County on the wye alignment along Avenue 21. Madera County has proposed the possibility of relinquishment of the roadway to reduce farmland impacts. The Ave 22 Wye alignment is recommended to be eliminated from further consideration, while advancing the Ave 21 option.

Figure 2: South SR 152 Wyes, Ave 22, and Ave 21 Options





1.3.2 Henry Miller/Ave 24 Wye

The preferred Program EIR/EIS alignment in the Merced to Fresno Section from San Jose to Merced follows Henry Miller Road in Merced County. Henry Miller becomes Avenue 24 as it nears the City of Chowchilla. This alignment has presented many concerns for the community of Chowchilla and the farming community within Merced and Madera counties. The original wye legs encroached on the City of Chowchilla on two sides and the North-South Alignment resulted in the third side and created a triangle around Chowchilla (Figure 3). In efforts to reduce the encroachment on the City and minimize farmland impacts, a larger wye is proposed. The refined Ave 24 Wye begins to diverge farther west of Chowchilla, resulting in longer track legs that avoid the Chowchilla growth boundary. However, because the wye is larger, the HST track can be designed to follow section grid lines adjacent to farmlands with smaller curved portions of HST, resulting in fewer oddly shaped remnant lands.

An extensive cooperative study of the two wyes by both the Merced to Fresno section and the San Jose to Merced Section teams revealed that the general impacts are similar and, therefore, both wyes are recommended to remain for further evaluation in the Draft EIR/EIS. It is therefore recommended that the revised Ave 24 Wye be carried forward into the Draft EIR/EIS.

Figure 3: Ave 24 Wye Options

| Ave 24 Wye Options   |   |
|--|---|
| Original Small Triangle  | Refined Larger Triangle   |
| <ul style="list-style-type: none"><li>• Smaller Triangle</li><li>• Constrains Chowchilla</li><li>• Curved Alignment causes more farm land Impact</li></ul> | <ul style="list-style-type: none"><li>• Larger Triangle</li><li>• Further from Growth Plans</li><li>• N-S Tangent Alignment/Aligned to Farm Grids/Less Impact</li></ul> |
|   |    |

1.4 New Design Options

1.4.1 East of Le Grand Design Option

The original BNSF - A1 Alternative passes through the City of Le Grand along the east side of the BNSF. The team has reviewed design option suggestions by the County to avoid Le Grand by passing just east of the Le Grand town limits. These options connect to both the previously concurred-upon design options along Mission Avenue and Mariposa Way. They are called the **Mission Ave East of Le Grand** and **Mariposa Way East of Le Grand**, respectively. Therefore, there would be four design options in the vicinity of Le Grand (Figure 4), as described below:

**Mission Ave Design Option** – Just south of the SR 99/East Childs Avenue interchange, the alternative would cross SR 99 and UPRR once more as it begins to curve to the east, crossing over East Mission Avenue and continuing south of East Mission Avenue. The alternative would transition to an at-grade profile east of Miles Road and continue east.

**Mission Ave East of Le Grand Design Option** – This design option varies from the Mission Ave design option by travelling farther east approximately 1 mile before turning southeast to cross Santa Fe Avenue and the BNSF railroad south of Mission Avenue to parallel the BNSF railroad one-half mile to the east, avoiding the urban limits of Le Grand. The design option crosses Santa Fe Avenue and the BNSF railroad again approximately one-half mile north of Marguerite Road to continue adjacent to the west side of the BNSF railroad.

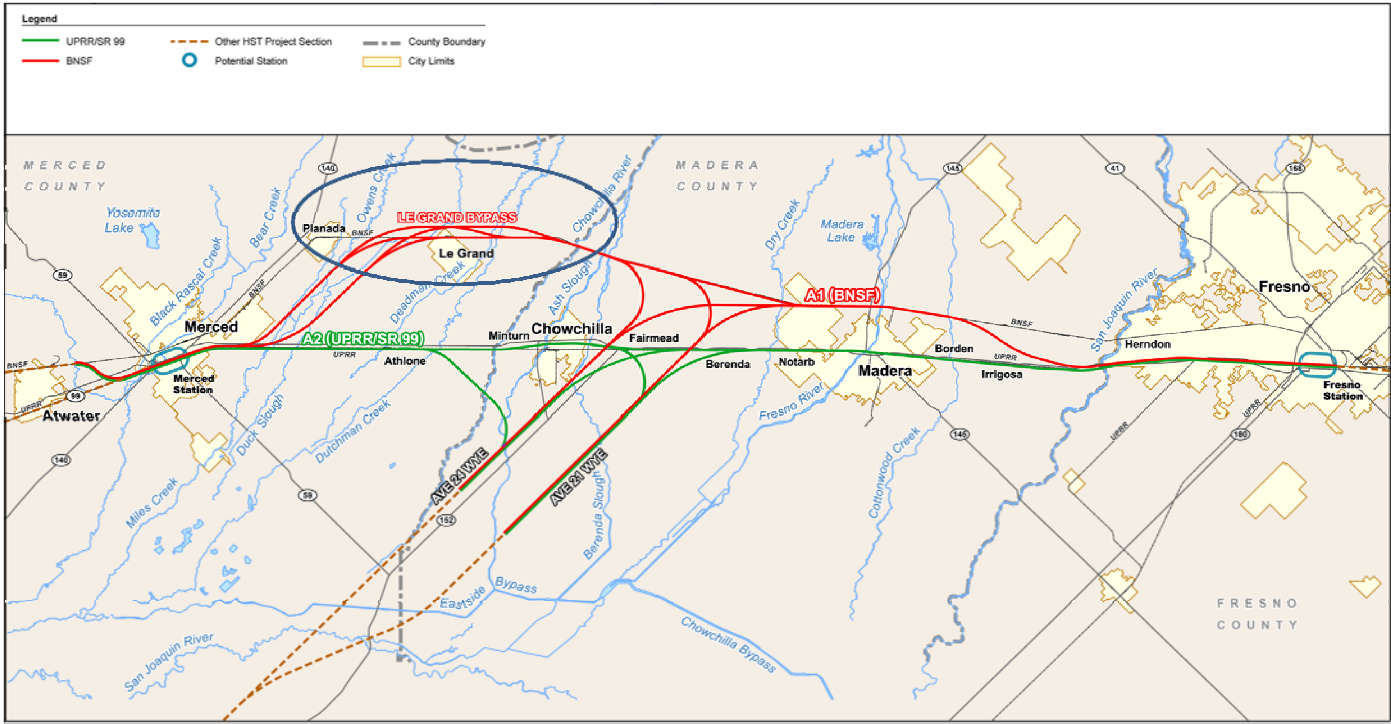
**Mariposa Way Design Option** – This design option would travel an additional mile to the southeast before crossing SR 99 near Vassar Road and turning east to the BNSF along the south side of Mariposa Way. East of Simonson Road, the alternative turns to the southeast. Just prior to Savana Road in Le Grand, the design option transitions from at-grade to elevated to pass through Le Grand on a 1.7-mile-long elevated guideway adjacent to and along the west side of the BNSF railroad.

**Mariposa Way East of Le Grand Design Option** – This design option varies from the Mariposa Way design option by travelling farther east approximately 1 mile before turning southeast to cross Santa Fe Avenue and the BNSF railroad less than one-half mile south of Mariposa Way and paralleling the BNSF railroad one-half mile to the east, avoiding the urban limits of Le Grand. The design option crosses Santa Fe Avenue and the BNSF railroad again approximately one-half mile north of Marguerite Road to continue adjacent to the west side of the BNSF railroad.

1.4.2 West Chowchilla/Ave 24 Design Option

Similar to Le Grand, the City of Chowchilla remains concerned that UPRR/SR 99 Alternative would travel through their community along SR 99. Recently, the Authority evaluated a design option to the UPRR/SR 99 Alternative in the vicinity of Chowchilla that may have multiple benefits to the project, as well as effectively avoid the City of Chowchilla (Figure 5). Upon reviewing the pros and cons of the various wye options, the team found that if the UPRR/SR 99 Alternative followed west along the Ave 24 Wye alignment, going westerly around Chowchilla, then returning to the UPRR/SR 99 corridor, the design option could possibly eliminate 10 miles of high-speed rail track construction compared to the UPRR/SR 99 - A2 Alternative. Fewer miles of track could similarly reduce associated impacts. The disadvantage of this design option is an increase in travel time between Los Angeles and Sacramento, but travel time for Los Angeles to San Francisco and San Francisco to Sacramento would be maintained. Pros and cons associated with this design option are as follows:

Figure 4: New Le Grand Design Options



Pros

- Potential to avoid/reduce impact on cities of Chowchilla, Fairmead, and Madera
- Works with both A1-BNSF and A2-UPRR/SR 99 alternatives
- 10 miles shorter than A2 – UPRR/SR 99 Alternative
- Eliminates 3 complex structure crossings of SR 99 and UPRR
- Lower cost
- Less impact on farmlands

Cons

- Increased travel time between Los Angeles and Sacramento

By designing the track to allow north-south movements west of Chowchilla, the addition of a 4-mile additional curve to the proposed Ave 24 Wye alignment results in reducing the total area inside the wye, and Chowchilla would not have tracks along the SR 99 corridor (which lie east of the downtown).

Additionally, this design option could also work with the BNSF A1 Alternative to connect UPRR/SR 99 with the BNSF via the Ave 24 Wye southbound leg if this proves to be desirable or beneficial. Other benefits of this concept are that linking these alternatives in a hybrid would provide Madera with another avoidance alternative than only the BNSF Alternative (A1). This design option is still in the development phases and the Authority is recommending that this design option be further explored to maximize the benefits and refine the alignment further.

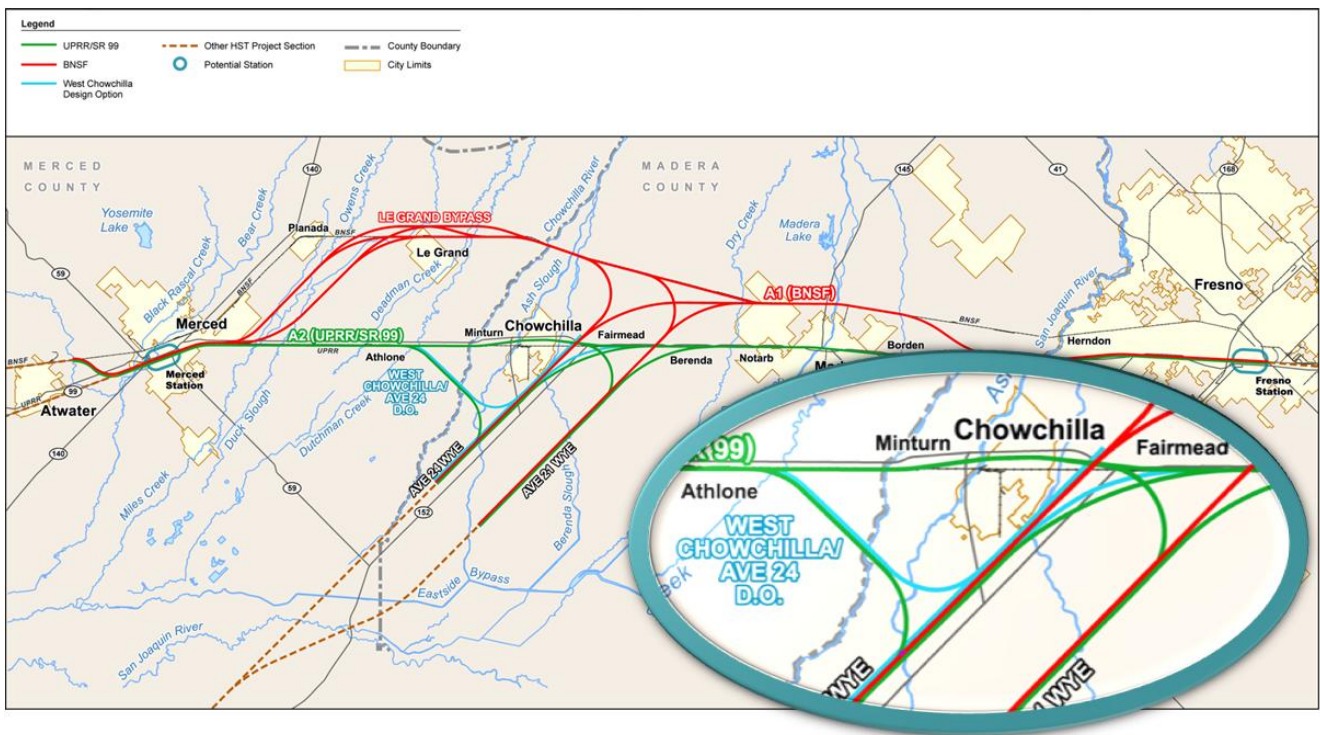
It should be noted that early discussions with involved cities and farms bureaus have already taken place. While this design option is new, there are mixed reactions. Table 1 below summarizes the early feedback from these agencies.



Table 1: Early Agency Feedback to West Chowchilla Design Option

| Involved Agencies                 | Early Feedback  |
|-----------------------------------|---|
| Merced County and Madera County   | Merit to explore, concerns about local farmlands  |
| Le Grand                          | Merit to explore, concerns about local farmlands  |
| Madera County                     | Interest, no commitment   |
| City of Madera                    | No commitment   |
| Chowchilla (officials and others) | Oppose, still constrains growth, still results in larger farmland impacts compared to A1 - BNSF |
| Merced and Madera Farm Bureaus    | Oppose, advocate A2 and SR 152  |

Figure 5: West Chowchilla Design Option



1.5 Heavy Maintenance Facility Evaluations

For the Merced to Fresno Section, eight potential HMF sites were identified in proposals submitted in response to the Request for Expressions of Interest. The sites were reviewed to identify those that were feasible and practical to construct. Key analysis criteria included proximity to HST mainline alternatives still under consideration, the feasibility of providing yard-track connections at both ends of the yard with a minimum length of spur tracks, and potential environmental factors. As a result of this analysis, three of the potential HMF sites are recommended to be dropped from further consideration (Figure 6):

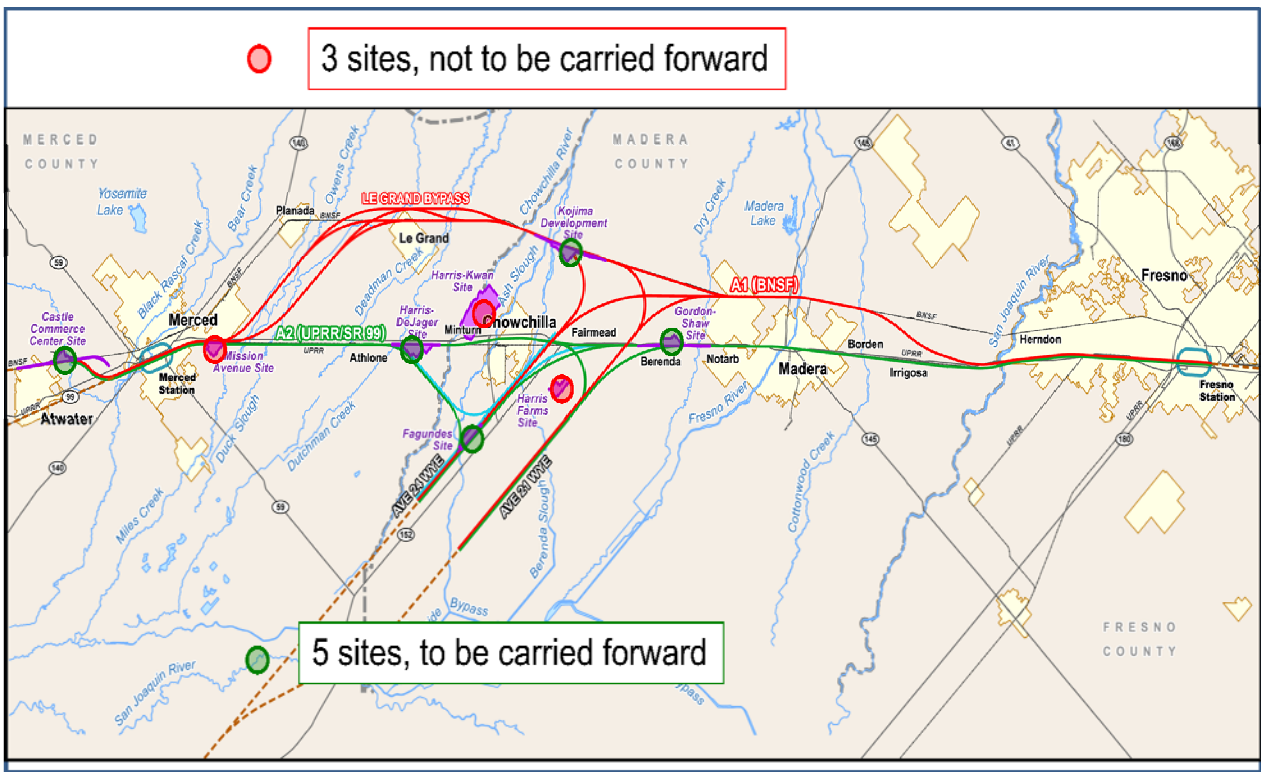
- Mission Avenue
- Harris-Kwan
- Harris Farms

The primary reason for recommending the Harris-Kwan and Harris Farms sites be dropped is that they are no longer on alignment alternatives that are still under consideration. As a result, they would each require spur tracks exceeding 5 miles in length for access. The additional 5 miles of spur track would have other environmental or farmland impacts. The primary reason for dropping the Mission Avenue site is the difficulty in providing access to the site from the north. The Mission Avenue site is approximately 3 miles south of the proposed Downtown Merced Station. Most of the distance along the HST alignment between the site and the station consists of a high-speed curve on a high aerial structure above SR 99. Design objectives require that yard turnouts be placed on straight sections of track. In this case, the nearest location for a yard turnout would be north of the Merced station. Therefore, the Mission Avenue site would require a north yard spur running at a high elevation through Downtown Merced.

There are five sites recommended to be carried forward for evaluation in the Draft EIR/EIS. It is important to note that they do not all work with each alternative. Those that are being recommended with the following alternatives to be studies further are as follows:

- Castle Commerce Center – Provides access to both alternatives, with access only in and out of south side in Phase 1. North access could be provided in Phase 2.
- Harris-DeJager - Access is only possible with UPRR Alternative with the Ave 21 Wye
- Fagundes – Provides access to both alternatives via Ave 24 Wye
- Gordon-Shaw - Access is only possible with UPRR/SR 99 Alternative with the Ave 24 Wye
- Kojima - Access is only possible with BNSF Alternative with the Ave 21 Wye

Figure 6: HMF Sites Recommended to Be Dropped from Consideration



2      **RECOMMENDATION**

The staff makes the following recommendations to the Board (a checkmark indicates carry forward and an “x” indicates do not carry forward). These recommendations are illustrated on Figure 7.

**San Jose Wye Connections**

- ✓ Carry forward refined Ave 24 Wye (large triangle)
- x Do Not Carry forward Ave 22 Wye for South SR 152 Option
- ✓ Carry forward Ave 21 Wye for South SR 152 Option

**New Design Options**

- ✓ Carry Forward Le Grand Design Options
- ✓ Carry Forward West Chowchilla Design option for further development and consideration

**Heavy Maintenance Facility Sites**

- x Do not Carry Forward 3 Nonfeasible Sites (Harris Farms, Harris-Kwan, Mission Ave)
- ✓ Carry Forward 5 Feasible Sites (Castle Commerce Center, Harris-DeJager, Fagundes, Gordon Shaw, Kojima Development)



Figure 7: Alternatives, Design Options, and Proposed Heavy Maintenance Facilities Recommended for Further Evaluation

